POSITION DESCRIPTION

Position Title: Postdoctoral Research Fellow
Organisation Unit: Centre for Mined Land Rehabilitation (CMLR)
Position Number: 3042672
Type of Employment: Full-time, fixed term for up to 3 years
Classification: Research Academic Level A or B. Level of appointment will be commensurate with qualifications, experience and academic achievements.

THE UNIVERSITY OF QUEENSLAND

The University of Queensland (UQ) contributes positively to society by engaging in the creation, preservation, transfer and application of knowledge. UQ helps shape the future by bringing together and developing leaders in their fields to inspire the next generation and to advance ideas that benefit the world. UQ strives for the personal and professional success of its students, staff and alumni. For more than a century, we have educated and worked with outstanding people to deliver knowledge leadership for a better world.

UQ ranks in the world’s top universities, as measured by several key independent ranking, including the Performance Ranking of Scientific Papers for World Universities (45), the US News Best Global Universities Rankings (52), QS World University Rankings (51), Academic Ranking of World Universities (55), and the Times Higher Education World University Rankings (60). UQ again topped the nation in the prestigious Nature Index; and secured a greater share of Australian Research Council grants in 2016 ($24.5 million) than any other university nationally.

UQ has an outstanding reputation for the quality of its teachers, its educational programs and employment outcomes for its students. Our students remain at the heart of what we do. The UQ experience –the UQ Advantage – is distinguished by a research enriched curriculum, international collaborations, industry engagement and opportunities that nurture and develop future leaders. UQ has a strong focus on teaching excellence, winning more national teaching excellence awards than any other in the country and attracting the majority of Queensland’s highest academic achievers, as well as top interstate and overseas students.

UQ is one of Australia’s Group of Eight, a charter member of edX and a founding member of Universitas 21, an international consortium of leading research-intensive universities.

Our 50,000-plus strong student community includes more than 13,000 postgraduate scholars and more than 12,000 international students from 144 countries, adding to its proud 230,000-plus alumni. The University has about 7,000 academic and professional staff and a $1.7 billion annual operating budget. Its major campuses are at St Lucia, Gatton and Herston, in addition to teaching and research sites around Queensland and Brisbane city.
The University has six Faculties and four University-level Institutes. The Institutes, funded by government and industry grants, philanthropy and commercialisation activities, have built scale and focus in research areas in neuroscience, biomolecular and biomedical sciences, sustainable minerals, bioengineering and nanotechnology, as well as social science research.

UQ has an outstanding track-record in commercialisation of our innovation with major technologies employed across the globe and integral to gross product sales of $11billion+ (see http://uniquest.com.au/our-track-record).

UQ has a rapidly growing record of attracting philanthropic support for its activities and will have further success in this area as an important strategic aim going forward.

Organisational Environment

One of the UQ’s eight research institutes, the Sustainable Minerals Institute (SMI) consists of some 240 staff and postgraduate students covering the areas of mining and geology, mineral processing, environment and rehabilitation, social responsibility, safety and risk, water and unconventional gas. SMI is industry-focused and consequently works with many leading global resources companies and many small-medium enterprises and suppliers. SMI interacts strongly with governments and community. A priority for SMI is the development of talent and providing an environment for successful and rewarding careers. SMI was founded in 2001 and since its inception has established a reputation as a unique institution for integrated sustainable development research in the resource sector. SMI is a truly global institute with staff and students from around the world. SMI's people are also diverse in their discipline backgrounds, which range across disciplines including anthropology, geology, soil science, sociology, hydrology, environmental science, engineering and mine management.

The Institute recognises and values equity and diversity, and encourages applications from any individual who meets the requirements of this position irrespective of gender, sexuality, race, ethnicity, religion, disability, age or other protected attributes. SMI strives to provide an inclusive working environment, and along with the University is committed to supporting staff with family and caring responsibilities by providing policies, programs and initiatives to help balance work and family responsibilities.


SMI comprises six major research Centres which are organised into pairs:

- **SMI's Production Centres are the:**
  - WH Bryan Mining and Geology Research Centre
  - Julius Kruttschnitt Mineral Research Centre

- **SMI's People Centres are the:**
  - Centre for Social Responsibility in Mining
  - Minerals Industry Safety and Health Centre

- **SMI's Environment Centres are the:**
  - Centre for Mined Land Rehabilitation
  - Centre for Water in the Minerals Industry

**The Centre for Mined Land Rehabilitation (CMLR)** is one of the research centres within the Environment Centre pair within SMI. The CMLR collaboratively engages in a broad spectrum of environmental research and education activities for the mining and mineral processing industries and associated government departments, at both national and international levels.
CMLR has core disciplinary strengths in the basic and applied biological, chemical and physical sciences, working at scales and technologies from the microbial to the catchment and regional. The majority of the research agenda is presently encompassed within the four key themes of Environmental Geochemistry, Landform Stability, Soil-Plant Systems, and Landscape Ecology, with complementary collaborative research programs currently in the areas of ecotoxicology and fauna ecology.

Further information on the CMLR may be accessed via http://www.cmlr.uq.edu.au.

Information for Prospective Staff

Information about life at UQ including staff benefits, relocation and UQ campuses is available at - http://www.uq.edu.au/current-staff/working-at-uq

The University of Queensland Enterprise Agreement outlines the position classification standards for Levels A to E.

DUTY STATEMENT

Primary Purpose of Position

To undertake high quality research in the topic area of environmental mineralogy, chemistry and functional materials in mined environmental remediation, within the program of “Ecological Engineering of Mine Wastes”, in the SMI-CMLR. In particular, this position will be closely working with the industry-funded research projects to develop eco-engineering technologies for rehabilitation of bauxite residues. The person is expected to develop expertise in mineralogical characterization, modelling of solid-solution interfaces and elemental speciation, and physical structure analysis.

Duties

Duties and responsibilities include, but are not limited to:

Research and training

- Experimental development and design of key aspect of research activities within large industry-funded projects
- Developing methods and techniques in analysis of properties of mineral colloids, secondary mineral gel and mineral surfaces in metal mine tailings and/or bauxite residues
- Model development and testing of solid-liquid phase interactions and (geo)chemical speciation
- Modelling mineralogical and geochemical processes in the interface of mineral surfaces and porewater
- Contribute to the development of new research ideas and research funding proposals and/or fellowships
- Writing up findings for publications in reputed and high impact international journals in relevant subject areas
- Participating in postgraduate training and supervision
Management

- Assist with project management
- Plan and conduct work at external sites including at remote mine locations
- Support additional projects on aspects of relevant disciplinary knowledge and skills when required

Other

Ensure you are aware of and comply with legislation and University policy relevant to the duties undertaken, including but not exclusive to:

- the University's Code of Conduct
- requirements of the Queensland occupational health and safety (OH&S) legislation and related OH&S responsibilities and procedures developed by the University or Institute/School
- the adoption sustainable practices in all work activities and compliance with associated legislation and related University sustainability responsibilities and procedures
- requirements of the Education Services for Overseas Students Act 2000, the National Code 2007 and associated legislation, and related responsibilities and procedures developed by the University

Organisational Relationships

The position reports to the group leader Associate Professor Longbin Huang, in the SMI-CMLR.
SELECTION CRITERIA

Essential

- PhD relevant to environmental mineralogy/chemistry or chemical engineering, with a comprehensive knowledge about the continuum of solid surface-colloid-solution chemistry.
- Demonstrated ability to conduct innovative research in solution chemistry and solid-aqueous interfaces
- Advanced skills in surface property characterisation and chemical modelling
- Ability to develop research initiative and innovative methods/techniques in physical/chemical/mineralogical analysis
- Ability to analyse complex experimental data by using chemical modelling packages (supported by coding skills) and statistical package
- Experience in grant writing
- Experience in tailings or mine waste research
- Demonstrated record of research publications in high impact journals in relevant research fields
- Use of microscopic (e.g., Scanning Electron Microscopy (in combination with EDX) and microspectroscopic (e.g., atomic force microscopy) methods for solid and aqueous sample characterization
- Chemical analysis of solid and aqueous samples by advanced analytical instruments
- Excellent written and oral communication skills, including well-developed presentation and communication skills
- High level of interpersonal skills, including the ability to work collaboratively with colleagues, particularly from different disciplines, as well as with administrative and technical staff.
- Demonstrated ability to manage competing priorities and excellent time management skills

Desirable

- Development and/or calibration of chemical speciation/transport/dissolution models in complex matrix
- Mineral reactions and cross-linking of mineral polymers in complex matrix such as tailings
- Experience in postgraduate supervision
- Experience in working with industry

Seminar

Applicants invited for interview may be expected to present a seminar in conjunction with the selection interview process.
Qualification Verification

An appointment to this position is subject to the verification of the highest academic qualification from the conferring institution.

The University of Queensland values diversity and inclusion and actively encourages applications from those who bring diversity to the University. Please refer to the University's Diversity and Inclusion webpage (http://www.uq.edu.au/equity) for further information and points of contact if you require additional support.

Accessibility requirements and/or adjustments can be directed to the contact person listed in the job advertisement.